User Guide

Twisted Pair

MTP T 15HD A

Architectural Twisted Pair Transmitters
MTP T 15HD WM,
MTP T 15HD A D,
MTP T 15HD A AAP

Extron Electronics
INTERFACING, SWITCHING AND CONTROL

68-2207-01 Rev. **B**
04 13

Safety Instructions

Safety Instructions • English

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Korean

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안전 가이드라인, 규제 준수, EMI/EMF 호환성, 접근성, 그리고 관련 항목에 대한 자세한 내용은 Extron 웹 사이트(**www.extron.co.kr**)의 Extron 안전 및 규제 준수 안내서, 68-290-01 조항을 참조하십시오.

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NOTE: This unit was tested with shielded I/O cables on the peripheral devices. Shielded cables must be used to ensure compliance with FCC emissions limits.

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Conventions Used in this Guide

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The following notifications are used in this guide:

WARNING: A warning indicates a situation that has the **potential** to result in death or severe injury.

ATTENTION: Attention indicates a situation that may damage or destroy the product or associated equipment.

NOTE: A note draws attention to important information.

Specifications Availability

Product specifications are available on the Extron website, **www.extron.com**.

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Introduction

This section gives an overview of the user guide. This section also describes the MTP 15HD A Architectural Series of transmitters. Topics that are covered include:

- **About this Guide**
- **About the MTP Transmitters**

About this Guide

This guide contains installation, configuration, and operation information for the Extron MTP 15HD A Architectural Series of transmitters.

About the MTP Transmitters

The Extron MTP T 15HD A Architectural Twisted Pair Transmitters (available in either black or white) are a series of wall, Architectural Adapter Plate (AAP) or furniture mounting products that are based on the MTP T 15HD A Twisted Pair Transmitter.

The Extron MTP T 15HD A architectural transmitters accept high resolution computer-video on a female 15-pin HD connector and a stereo audio signal on a female 3.5 mm mini stereo jack. The female RJ-45 output connector, mounted on a 3 inch pigtail, transmits a computer video and summed mono audio signal to an MTP R 15HD A, MTP RL 15HD A, or MTP RL 15HD A SEQ receiver. A pre-peaking control switch boosts the transmission distance of the proprietary signal.

The MTP T 15HD A architectural series is part of a system for long-distance distribution of VGA or other high resolution video and audio, over Extron Enhanced Skew-Free AV UTP Cable, or any CAT 5, 5e, or 6 shielded twisted pair (STP), unshielded twisted pair (UTP), or foil shielded twisted pair (FTP) cable.

Twisted Pair Cable Advantages

Twisted pair cable is smaller, lighter, more flexible, and less expensive than coaxial cable. Termination of the cable with RJ-45 connectors is simple, quick, and economical (see **Twisted Pair Cable Termination** on page 13 for wiring details).

Transmission Distance

The maximum distance is determined by the frequency and resolution of the signal that is input to the transmitter.

See the table on page **2** for the recommended maximum transmission distances and transmitter Pre-Peak switch positions using Extron Enhanced Skew-Free AV UTP cable or UTP CAT 5 cable, terminated with CAT 5 rated connectors.

Video Format	Pre-Peak off	Pre-Peak on	Max. Distance (High Quality)	Max. Distance (Variable Quality)
Composite, S-video, Component			800' (245 m)	1000' (300 m)
640x480	<300' (90 m)	>350' (105 m)	700' (215 m)	750' (240 m)
800x600	<300' (90 m)	>350' (105 m)	550' (165 m)	650' (200 m)
1024x768*	<300' (90 m)	>350' (105 m)	500' (150 m)	600' (185 m)
1280x960*	<300' (90 m)	>350' (105 m)	400' (120 m)	500' (150 m)
1280x1024*	<250' (75 m)	>300' (90 m)	350' (105 m)	450' (135 m)
1360x765	<250' (75 m)	>300' (90 m)	400' (120 m)	500' (150 m)
1365x768	<250' (75 m)	>300' (90 m)	400' (120 m)	450' (135 m)
1366x768	<250' (75 m)	>300' (90 m)	400' (120 m)	450' (135 m)
1400x1050	<250' (75 m)	>300' (90 m)	350' (105 m)	400' (120 m)
1440x900	<250' (75 m)	>300' (90 m)	350' (105 m)	400' (120 m)
1600x1200*	<250' (75 m)	>300' (90 m)	300' (90 m)	450' (135 m)
1920x1200	<250' (75 m)	>300' (90 m)	300' (90 m)	400' (120 m)
2048x1080	<250' (75 m)	>300' (90 m)	300' (90 m)	400' (120 m)
HDTV 720p	<250' (75 m)	>300' (90 m)	400' (120 m)	500' (150 m)
HDTV 1080i	<250' (75 m)	>300' (90 m)	300' (90 m)	400' (120 m)
HDTV 1080p	<250' (75 m)	>300' (90 m)	300' (90 m)	400' (120 m)

Figure 1. Recommended Pre-Peak Switch Positions and Transmission Distances at 60 Hz

NOTES:

- Resolutions marked with an asterisk (*) in the table above have the same range specifications at 75 Hz.
- It is possible to exceed the recommended distance, but image quality may be reduced.

NOTES:

- The transmitters are for use with, and perform best with Extron Enhanced Skew-Free AV cable terminated in accordance with the TIA/EIA T 568 A wiring standard. CAT 5 cables are acceptable but less preferable. We also recommend the use of pre-terminated and tested cables. Cables terminated on site should be tested before use to ensure that they comply with Category 5 specifications.
- The recommendations shown in the table on the previous page apply for a single transmitter connected to a MTP receiver and for a daisy chain. For example, the maximum suggested range for 1024 x 768 video is 300 feet (90 m) with Pre-Peak off and 500 feet (150 m) with Pre-Peak on whether the system consists of one transmitter and one receiver or a transmitter and three daisy-chained receivers.

About the MTP T 15HD A WM

The MTP T 15HD A WM Twisted Pair Transmitter is a wall or furniture mountable version of the MTP T 15HD A, and can be mounted into any standard Underwriters Laboratories (UL) listed one-gang electrical wall box or by using the included mud ring.

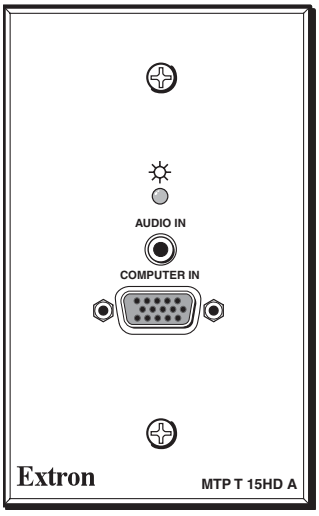


Figure 2. MTP T 15HD A WM Face

About the MTP T 15HD A D

The MTP T 15HD A D Twisted Pair Transmitter is a wall or furniture mountable version of the MTP T 15HD A that fits any Decora® style wall plate.

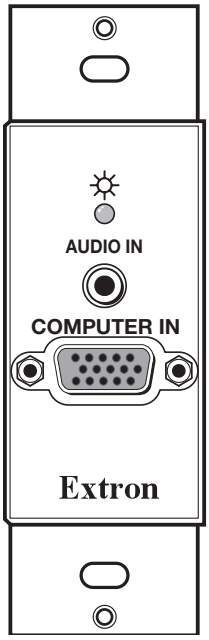


Figure 3. MTP T 15HD A D Face

About the MTP T 15HD A AAP

The MTP T 15HD A AAP Twisted Pair Transmitter can be mounted in any Extron product that accepts a double space AAP, such as the AAP 102.

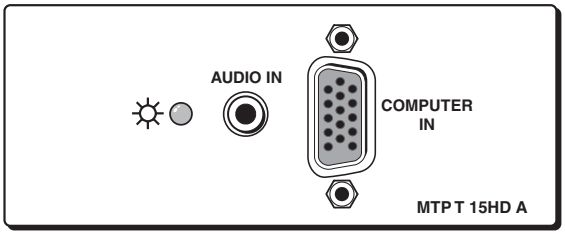


Figure 4. MTP T 15HD A AAP Face

Installation

This section provides information on:

- **Installing the MTP T 15HD A WM and MTP T 15HD A D**
- **Installing the MTP T 15HD A AAP**
- **Connections and Settings**
- **Power Supply Wiring and Grounding**
- **Twisted Pair Cable Termination**
- **EDID Minder Configuration**

Installing the MTP T 15HD A WM and MTP T 15HD A D

The MTP T 15HD A WM and MTP T 15HD A D can be installed in a one-gang electrical wall box, with the MTP T 15HD A D fitting into a Decora wall plate cover (supplied). If a suitable wall box is already installed, follow steps 5 through 8 on the following page. To install a new wall box or to install using the included mud ring, follow all the steps below. UL-listed wall boxes are recommended.

The installation must conform to national and local electrical codes and to the size requirements of the wall plate.

The following UL requirements pertain to the installation of the MTP T 15HD A architectural series into a wall or furniture.

- These units are not to be connected to a centralized DC power source or used beyond their rated voltage range.
- These units must be installed in UL-listed junction boxes.
- These units must be installed with conduit in accordance with the National Electrical Code.

Preparing the Site and Installing the Wall Box

Choose a location that allows cable runs without interference. Allow enough depth for both the wall box and the cables. The box should be at least 2.5 inches (6.4 cm) deep to accommodate the connectors and cables. Install the cables into the wall, furniture, or conduits before installing the wall plate.

1. If a wall box is not available to use for a template, use the dimensions from the template on page **15** or download a full size template online at **www.extron.com**.
   If installing directly into furniture, cut out the center portion of the template.
2. Place the template (or the wall box) against the installation surface, and mark the guidelines for the opening.
3. Cut out the material from the marked area.
4. Insert the wall box into the opening. The box or the rear connectors of the wall plate should fit easily into the opening. Enlarge or smooth the edges of the opening as needed.

5. With the power supply disconnected, feed cables for the output devices through the opening and through the wall box punch-out holes, securing them with cable clamps to provide strain relief.
6. Trim back, insulate, or do both to exposed cable shields with heat shrink to reduce the chance of short circuits.
   a. To prevent short circuits, the outer foil shield can be cut back to the point where the cable exits the cable clamp.
   b. Both braided and foil shields should be connected to an equipment ground at the other end of the cable.
7. Connect the output device cables to the rear of the MTP architectural wall plate (see **Twisted Pair Cable Termination** on page 13 for connector wiring details).
8. Connect input devices (see **Front Panel Features** on page 9 for connector details), restore the power supply, and test the wall plate. Make any cabling adjustments before final installation as the cables will be inaccessible afterwards.

Installing into a Mud Ring (WM and Decora Models)

1. Using the mud ring as a guide, mark the edges and cut out the material within the marked area.
2. Insert the mud ring into the opening, rotate the arms, and secure with the supplied screws.
3. Follow steps 5 through 8 of **Preparing the Site and Installing the Wall Box** above, and **Final Installation** on page 7.

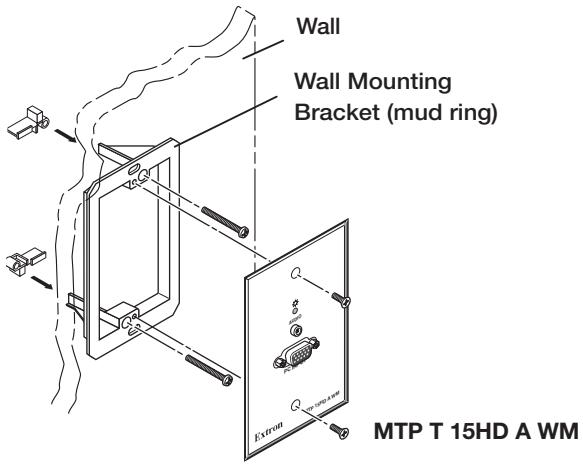


Figure 5. Mounting the MTP T 15HD A WM Using the Mud Ring

Final Installation

After testing and making any adjustments, turn off the power supply and carefully insert the wall box or mud ring into the opening.

Attach it with nails or screws, leaving the front edge flush with the outer wall or furniture surface (see figure 6).

NOTES:

- If attaching the wall box to wood, use four #8 or #10 screws or 10-penny nails. A minimum of 0.5 inches (1.3 cm) of screw thread must penetrate the wood.
- If attaching the wall box to metal studs or furniture, use four #8 or #10 self-tapping sheet metal screws or machine bolts with matching nuts.

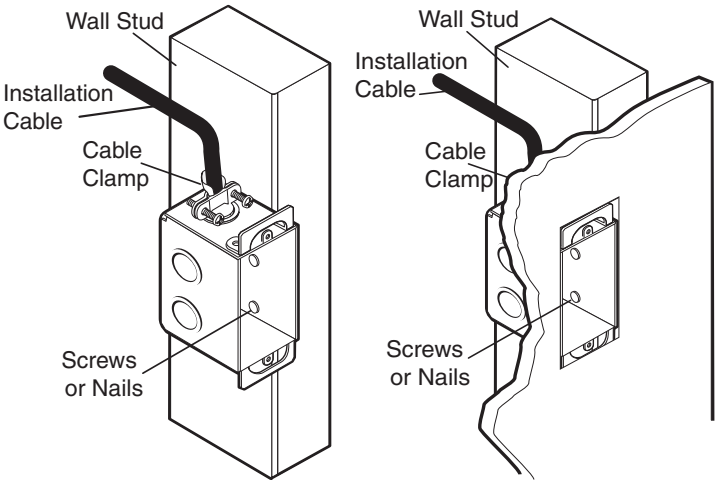


Figure 6. Installing the Wall Box

- If installing an MTP T 15HD A WM, mount the faceplate directly to the box or mud ring.
- If installing an MTP T 15HD A D, mount it directly to the wall box, then attach the Decora wall plate, as shown in figure 7, and restore the power supply.

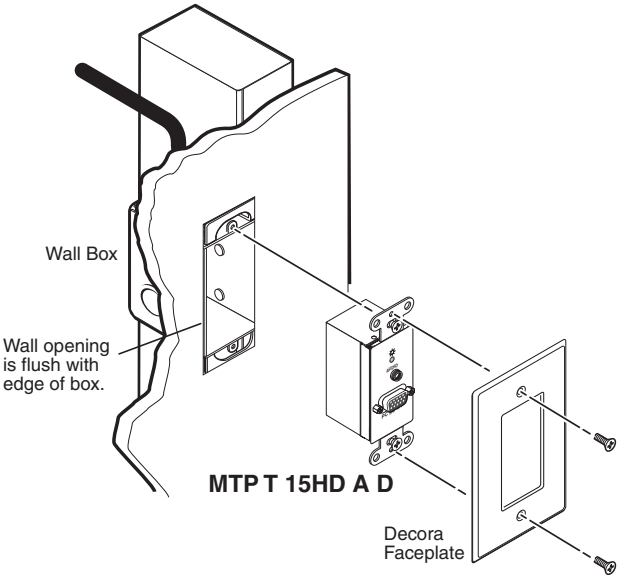


Figure 7. Mounting the MTP T 15HD A D

Installing the MTP T 15HD A AAP

The MTP T 15HD A AAP must be attached to a device faceplate or AAP wall plate and cabled before the device or wall plate is pretested or installed in a wall or furniture.

1. Before attaching any cables, insert the standoffs of the MTP T 15HD A AAP through the holes in the faceplate or AAP wall plate of the device.
2. Using the provided #4-40 nuts and captive washers, secure the AAP to the faceplate or wall plate.
3. Repeat steps 1 and 2 to mount any other AAPs. Cover any openings in the faceplate with blank plates (provided with the AAP faceplate).
4. Be sure to include the AAP connectors as part of the installation pretest before final installation of the faceplate.
5. For more detailed installation information, see the installation guide shipped with the device or AAP faceplate.

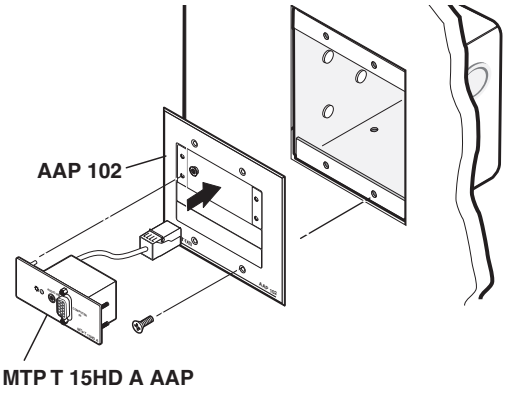


Figure 8. Mounting the MTP T 15HD A AAP

Connections and Settings

ATTENTION: Potential damage to property.
Do not connect these devices to a computer data or telecommunications network.

Front Panel Features

The front panel features are the same on all the MTP T 15HD A architectural models, as shown in figure 9.

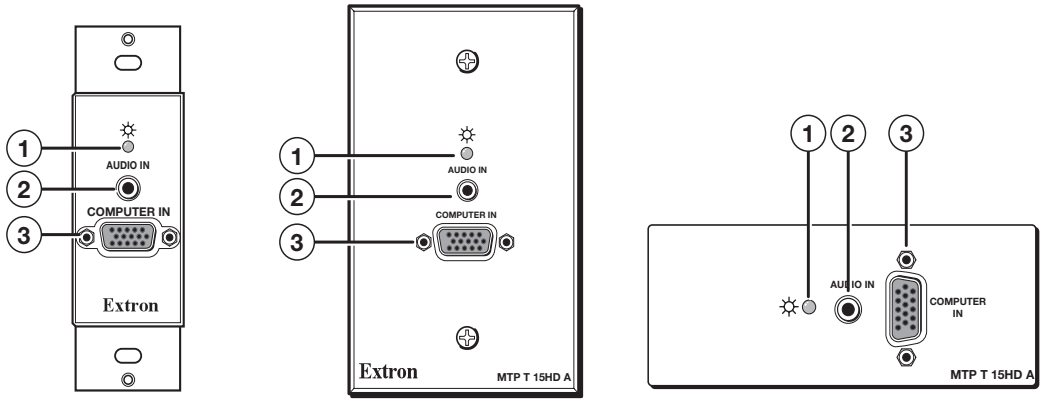
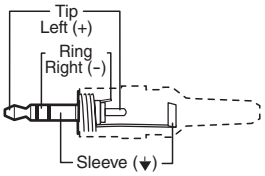


Figure 9. Architectural Series Front Panel Features

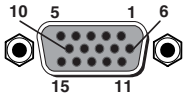
① **Power LED** — Indicates power is applied to the MTP.

② **Audio input connector** — Connect a 3.5 mm stereo audio plug into this jack for unbalanced audio input. Wire the plug as shown in the figure to the right.



NOTE: The figure above shows a typical audio connector, which consists of the tip, ring, and sleeve. The tip, ring, and sleeve wires are also shown on the captive screw audio connector diagram (see figure 11 on page **10**).

③ **Video input connector** — Connect a computer video source to this 15-pin HD connector for high resolution video input.



Female

NOTES:

- Input only sync signals (no video signals) on the sync pins (13 and 14).
- For component video, use the R (R-Y) and R return pins (pins 1 and 6), G (Y) and G return pins (pins 2 and 7), and B (B-Y) and B return pins (pins 3 and 8).
- For S-video, use the R, R return (C-chroma), G, and G return (Y-luma) pins.
- For composite video, use the G pin and the associated return pin. For additional genlocked video signals, use the R, B, and associated return pins.

Rear Panel Features

With the exceptions of ④, ⑤, and ⑥ on the MTP T 15HD A D, as noted in the figures and descriptions, the rear panel features are the same on all the MTP T 15HD A architectural models.

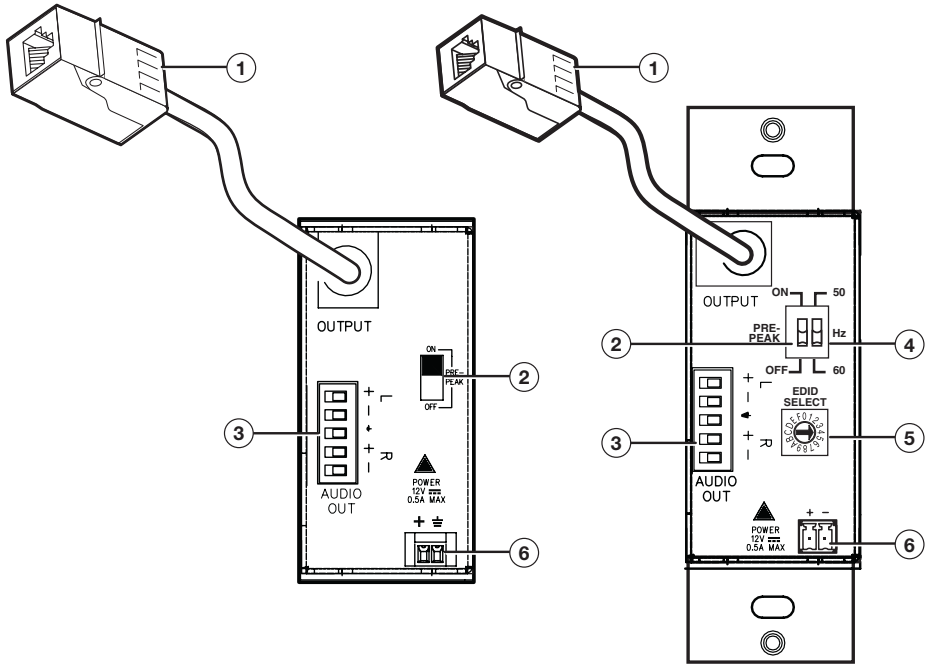
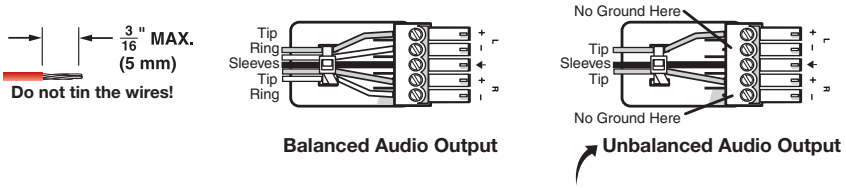


Figure 10. MTP T 15HD WM and AAP (Left) and MTP T 15HD A D (Right) Rear Panel Features

① **Output connector** — Connect one end of a twisted pair cable to this RJ-45 female connector on the transmitter. Connect the opposite end of the cable to the RJ-45 connector of the receiver (see **Twisted Pair Cable Termination** on page 13 to wire the RJ-45 connectors).

② **Pre-Peak switch** — The Pre-Peak DIP switch boosts the video signal output to correct for long cable runs (see the table on page **2** for suggested switch settings based on the transmitted video format and transmission distance).

③ **Stereo Audio output connector** — Insert bare wires into this direct insertion 3.5 mm, 5-pole captive screw audio connector for stereo audio outputs. Wire the connector as shown in figure 11.



ATTENTION: Potential damage to property.
For unbalanced audio, connect the sleeves to the ground contact.
DO NOT connect the sleeves to the negative (-) contacts.

Figure 11. Captive Screw Audio Connector Wiring

④ **Frequency Select switch** — The Frequency select DIP switch sets the vertical frequency of the factory-installed EDID. 50 Hz or 60 Hz can be selected.

⑤ **EDID Select rotary switch** — This 16 position rotary switch is used to select which factory-installed EDID information will be used. Position 0 is not used. Positions 1 through F correspond to the EDID information in the table in figure 15 on page **14**.

⑥ **Power connector** — Connect the cables from the included external 12 VDC power supply to the rear panel 3.5 mm, 2-pole captive screw connector (see figures 12 and 13 below and on the next page for wiring and grounding instructions).

To verify the polarity before connection, plug in the power supply with no load and check the output with a voltmeter.

Power Supply Wiring and Grounding

Figure 12 shows how to wire the power connector. Figure 13 shows how to ground the unit through the power connector.

ATTENTION: Potential damage to property.

- Power supply voltage polarity is critical. Incorrect voltage polarity can damage the power supply and the transmitter or receiver. Identify the power cord negative lead by the ridges on the side of the cord.
- The length of the exposed (stripped) copper wires is important. The ideal length is 3/16 inches (5 mm). Longer bare wires can short together. Shorter wires are not as secure in the connector and could be pulled out.

To verify the polarity before connection, plug in the power supply with no load and check the output with a voltmeter.

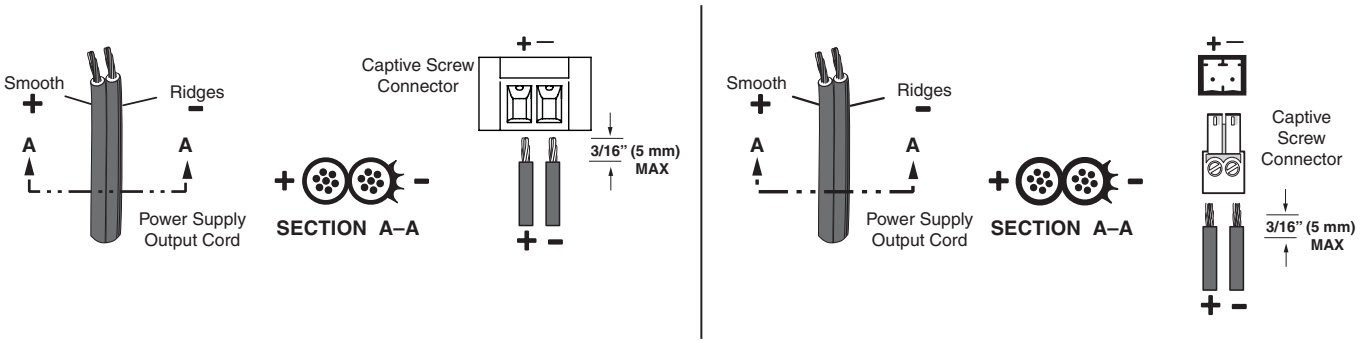


Figure 12. Power Connector Wiring for the MTP T 15HD WM and AAP (Left), and the MTP T 15HD A D (Right)

Extron twisted pair products can be adversely affected by electrostatic discharge (ESD) if they are not grounded correctly. To prevent malfunctions or product damage, an installer can correctly ground an Extron twisted pair product by following the diagram in figure 13 on the next page.

Ground the power port by inserting one end of the grounding wire to the negative or ground pin on the power input connector.

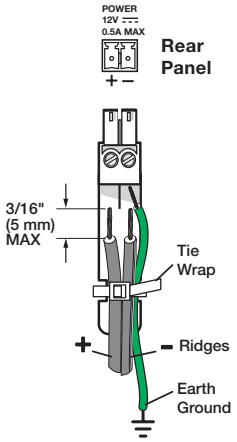


Figure 13. Power Connector Wiring and Grounding

WARNING: Failure to follow these instructions may result in serious injury.
The two power cord wires must be kept separate while the power supply is plugged in. Disconnect the power before wiring.

NOTES:

- Your transmitter and receiver pair may have shipped with a blue captive screw connector. This blue connector can be plugged into either a blue or an orange power receptacle. The blue connector does not have the extended tail or the included tie-wrap.
- Do not tin the power supply leads before installing in the direct insertion connector. Tinned wires are not as secure in the connectors and could be pulled out of the connector.

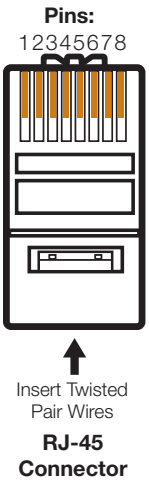
ATTENTION: Potential damage to property.

- This product is intended to be supplied by a Listed Power Unit marked “Class 2” or “LPS”, rated 12 VDC, maximum 1.0 A. Always use a power supply supplied or specified by Extron. Use of an unauthorized power supply voids all regulatory compliance certification and may cause damage to the supply and the end product.
- Unless otherwise stated, the AC/DC adapters are not suitable for use in air handling spaces or in wall cavities. The power supply is to be located within the same vicinity as the Extron AV processing equipment in an ordinary location, Pollution Degree 2, secured to the equipment rack within the dedicated closet, podium, or desk.
- The installation must always be in accordance with the applicable provisions of National Electrical Code ANSI/NFPA 70, article 75, and the Canadian Electrical Code part 1, section 16. The power supply shall not be permanently fixed to building structure or similar structure.

Use the supplied tie wrap to strap the power cord to the extended tail of the connector. As an alternative, an Extron PS 124 Universal 12 VDC Power Supply can power multiple MTPs or other Extron 12 VDC devices using only one AC power connector.

Twisted Pair Cable Termination

Figure 14 details the recommended termination of twisted pair cables with RJ-45 connectors in accordance with the TIA/EIA T568A or TIA/EIA T568B wiring standards. You can use either standard with CAT 5, 5e, or 6 cable, but ensure that you **use the same standard on both ends of the cable**.



Pin	TIA/EIA T 568 A Wire color	TIA/EIA T 568 B Wire color	Signal
1	White-green	White-orange	Red/V. sync +
2	Green	Orange	Red/V. sync -
3	White-orange	White-green	Mono audio +
4	Blue	Blue	Green +
5	White-blue	White-blue	Green -
6	Orange	Green	Mono audio -
7	White-brown	White-brown	Blue/H. sync +
8	Brown	Brown	Blue/H. sync -

NOTE: When using Enhanced Skew-Free AV UTP cable, use the TIA/EIA T568A standard only.

Figure 14. Twisted Pair Cable Termination Diagram

NOTES:

- RJ-45 termination with CAT 5, 5e, or 6 cable must comply with the TIA/EIA T568A or TIA/EIA T568B wiring standards for all connections.
- RJ-45 termination with Skew-Free AV UTP cable must comply with TIA/EIA T568A only.
- The audio data that is carried on wire pair 3 and 6 is incompatible with the Extron TPX 88 A, which cannot switch the audio, output it locally, or break it away.
- Extron Enhanced Skew-Free AV cable is not recommended for Ethernet or LAN applications. This cable is specially designed for compatibility with Extron Twisted Pair products that are wired using the TIA/EIA T568A standard.
  - The green, brown, and blue wire pairs of this cable have virtually identical lengths and should be used to transmit the RGB signals.
  - The orange wire pair of this cable has a different length and should not be used to transmit the RGB signals.

EDID Minder Configuration

The MTP T 15HD A D unit supports emulation of factory-installed EDID information through EDID Minder.

To use factory-installed EDID information:

1. If you have not already done so, connect the source device to the MTP 15HD transmitter. Do not power on the source device at this time.
2. Set the rear panel DIP switch (see ④ on page 11) to the required frequency (50 or 60 Hz).

   NOTE: When the rotary dial (see ⑤ on page 11) is set to position 0, the frequency DIP switch position is ignored.

3. Set the rotary dial (see ⑤ on page 11) to the required position (see figure 15 for specific EDID and its corresponding rotary switch position).

   Positions 1 through F are factory installed. Position 0 is not used.

Rotary Switch Position	Resolution
0	Not used
1	800x600
2	1024x768 (default)
3	1280x720
4	1280x768
5	1280x800
6	1280x1024
7	1360x768
8	1366x768
9	1400x1050
A	1400x900
B	1600x900
C	1600x1200
D	1680x1050
E	1920x1080
F	1920x1200

Figure 15. EDID Settings Table

Reference Information

This section includes a template with cut-out dimensions for installation of the MTP T 15HD A WM or MTP T 15HD A D transmitter.

Decora Template Dimensions

Use the dimensions in the cut-out template in figure 16 as a guide for cutting a hole in a wall or furniture.

NOTES:

- The drawing is not full size or to scale. **DO NOT** scale up or print to use as a template.
- Full size templates are available online at **www.extron.com**.

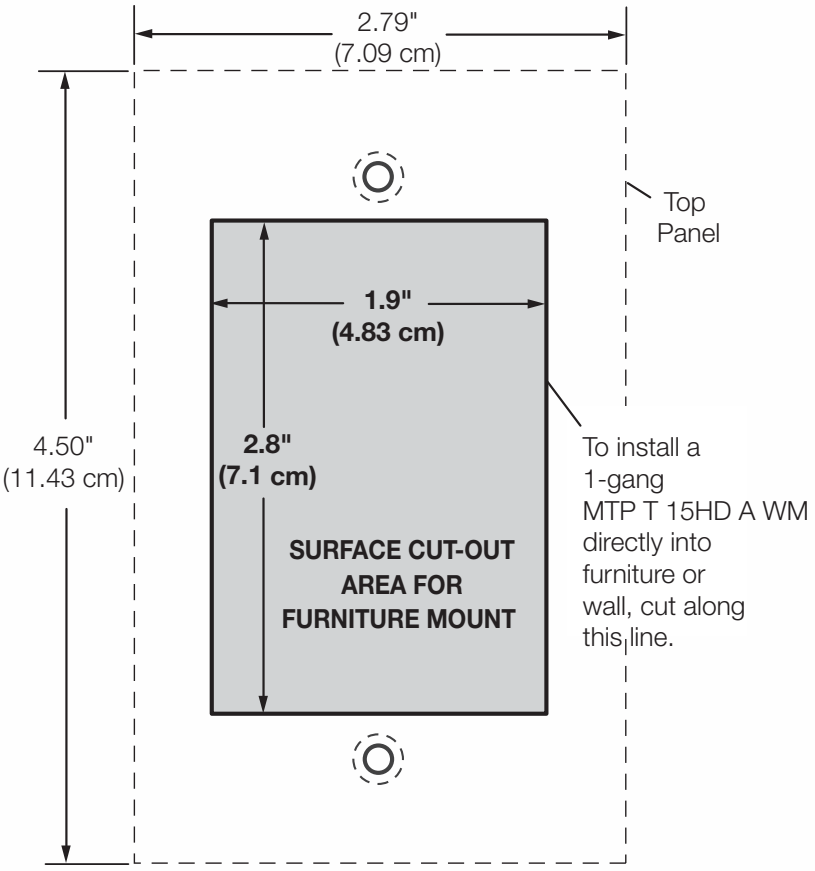


Figure 16. 1-gang Cut-out Template

Extron Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

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Extron Electronics
1230 South Lewis Street
Anaheim, CA 92805
U.S.A.

Japan:
Extron Electronics, Japan
Kyodo Building, 16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

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Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

China:
Extron China
686 Ronghua Road
Songjiang District
Shanghai 201611
China

Asia:
Extron Asia Pte Ltd
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363
Singapore

Middle East:
Extron Middle East
Dubai Airport Free Zone
F12, PO Box 293666
United Arab Emirates, Dubai

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions, or if modifications were made to the product that were not authorized by Extron.

NOTE: If a product is defective, please call Extron and ask for an Application Engineer to receive an RA (Return Authorization) number. This will begin the repair process.

USA: 714.491.1500 or 800.633.9876
Asia: 65.6383.4400
Europe: 31.33.453.4040
Japan: 81.3.3511.7655

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

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